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Year of the Locust threatens crops in East Africa.

Desert Locust Outbreak Spreading in East Africa

By H. Charles Treakle

An outbreak of Desert Locust has reached dangerous levels in war-weakened Ethiopia and Somalia. With the present lack of effective actions plus continued favorable rains for breeding, the pest poses a serious threat to crops—the fragile lifeline for millions of people throughout East Africa.

This year's Desert Locust concentration is now considered the worst since 1968. During that outbreak (the largest since 1959), locusts caused considerable crop damage, reaching near-plague levels in several countries. But, timely reporting and international cooperation averted greater devastation.

In February 1978, heavy locust breedings were reported in the Red Sea coastal areas, including parts of Ethiopia and Somalia where war operations prevented an effective control program. As a result, locust infestations continued unchecked in those areas. However, similar infestations at the same time along the southern rim of the Arabian Peninsula were successfully controlled.

By early June, large swarms—along with drought and crop disease—caused food shortages affecting more than a million people in Wollo Province and other regions of Ethiopia.

The Desert Locust Control Organization for Eastern Africa (DLCOEA) has requested assistance to help keep swarms from migrating to other African—and Asian—countries. (Already, a locust swarm has been reported in Iran and India. However, it is believed these locusts originated in the Arabian Peninsula.)

The United States and other nations have responded by supplying insecticides and equipment needed for aerial spraying.

The author is an agricultural economist, USDA's Economics, Statistics, and Cooperatives Service.

Entomologist Joseph W. Gentry of USDA's Animal and Plant Health Inspection Service (APHIS) said that, as of June 28, this year's locust buildup is not of plague proportions, but "is a very serious threat and, if effective control measures are not taken immediately, the situation could very easily reach plague level" should swarms migrate, as in the past, to other countries of Africa, the Arabian Peninsula, and the Asian countries of Iran, Pakistan, Afghanistan, and India. Gentry has been working with the United States Agency for International Development (AID) and the Food and Agriculture Organization (FAO) to define the problems and determine needs for donor assistance in locust control.

Tanzanian Minister of Agriculture John Malecela, current DLCOEA chairman, said on returning from locust-infested areas in early June that 43 swarms had been spotted in Ethiopia and 17 in Somalia, with each swarm covering from 10 to 40 square miles. Stressing the damage capability, he said that a square-mile swarm can eat about 14 tons and travel more than 100 miles a day.

The dreaded Desert Locust can go through years of unnoticed dormancy until the right weather conditions transform this relative insignificant grasshopper into a collective menace, whose movement—controlled by air temperatures and hastened by prevailing winds—can span thousands of miles.

Locusts attack many cultivated and wild crop hosts, with the most important being alfalfa, corn, sorghum, millet, beans, sugarcane, cotton, citrus, and small grains. All of these crops are grown in the threatened areas of East Africa. The Desert Locust is not a finicky eater and all foliage appears to be gourmet food for this hungry insect that gets more voracious as it grows older. Average life spans are estimated at about 65 days for females and 80 days for males.

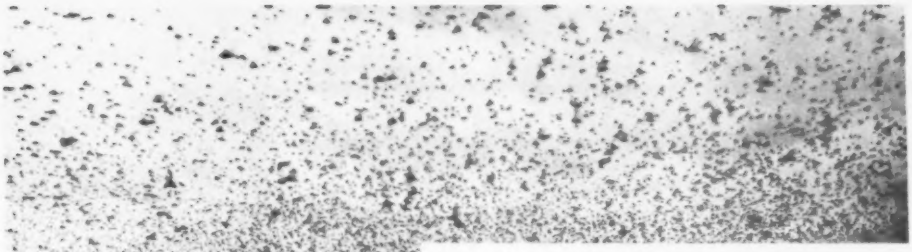
So far, there have been no reliable estimates quantifying the locust damage done to specific crops in individual countries.

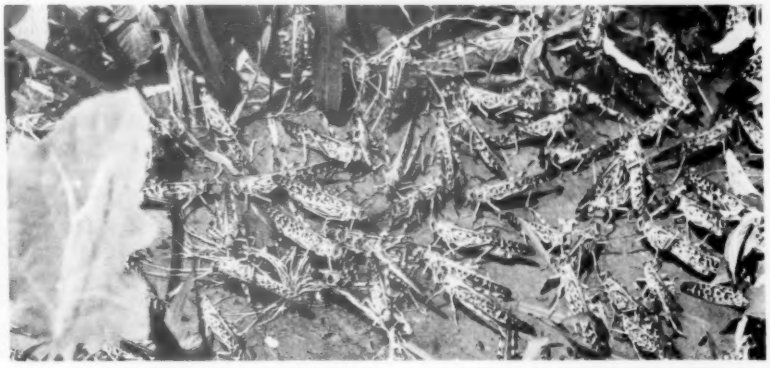
As early as February, FAO issued a special report, warning countries of heavy locust breedings in coastal areas of the Red Sea that included the Tihama Plain in Saudi Arabia and in both Yemens, Ethio-

Grim Glance At the Dreaded Desert Locust

The Desert Locust can be a serious threat to the food supply in as much as a fifth of the world's land. Locust plagues—recorded in the Bible and by Pliny, St. Augustine, and others—have been combated throughout history, but remain one of agriculture's most serious pests, as the current outbreak in East Africa grimly demonstrates. Since 1960, more than 50 countries have joined the battle against the Desert Locust, which is:

- *Voracious.* Weighing an average of a couple of grams, locusts eat their weight each day. At this rate, 200-300 locusts consume about a pound of food a day; and a ton of locusts eat as much as 250 people eat daily.
- *Mobile.* Desert Locusts often migrate 2,000 to 3,000 miles and swarms have been sighted 1,200 miles at sea. Swarming locusts are aided by cyclonic desert winds and prevailing winds, which sweep across breeding and hatching areas.
- *Fertile.* Female locusts usually lay three times at intervals of 5 or 6 days. Each time, an egg case holds 20 to 120 eggs that hatch in 2 or 3 weeks. If weather is favorable, the hatch quickly exceeds food supplies. This, in turn, can trigger a shift to the swarming phase. □





Swarm of Desert Locusts (left) darkens sky. Infestations (below) were noted in February, but were not adequately controlled in Ethiopia. Close observations (bottom) help contain locust outbreak.
—FAO photos

pia and Somalia.

During March and April, further widespread rainfall in breeding areas made conditions exceptionally favorable for a rapid buildup. On the Arabian side of the Red Sea, controls were instituted, but the Ethiopian-Somali conflict in the Ogaden and other disturbances in Ethiopia prevented the DLCOEA from taking measures to halt the buildup in Ethiopia and Somalia.

There, swarms were sighted in early June and soon afterwards they began migrating south, stripping vegetation on the way. A first alert was sounded in Kenya, Tanzania, Uganda, and other nearby East African countries. With the locust invasion at its border, Kenya is ready with ground control teams and crop dusting equipment. However, because the buildup had gone unabated in the early breeding areas, control may be difficult at best.

In Ethiopia, the locust outbreak is the latest in a series of misfortunes—war, drought, and crop disease—that has greatly reduced farm production and endangered the lives of many of its citizens.

In addition to drought and locust swarms, the Ethiopian State radio reported in early June that the country's agricultural situation had deteriorated further with the outbreak of the ergot fungus disease of cereals. The report said ergot fungus was contaminating much of the nation's grains and already causing ergotism among people and animals eating infected grain.

Ergotism results from the action of alkaloids of the fungus ergot, which causes a constriction of blood vessels and affects the nervous and the gastro-intestinal systems. Its victims are subject to mental disorders and internal disturbances followed by lameness. This crippling is the result of necrosis stemming from a lack of blood flow through the constricted vascular system of the extremities, which causes gangrene.

For the last few years, Ethiopia has been torn by internal and external strife. First, the severe drought of 1973-74 contributed to the dethronement of Emperor Haile Selassie on September 12, 1974. A complete Governmental reorganization followed and ensuing land reforms along socialist lines were resisted by large land owners. Agricultural output suffered.

The secessionist movement in the north has affected the Provinces of Eritrea, Tigre, Gomdar, and Wollo while in the south the Somali-aided uprising in the Ogaden was finally contained with help from Cuba and the Soviet Union.

Nonetheless, the military turmoil resulted in the conscription of thousands of peasants, leading to a drop in farm output. As well, use of trucks for military purposes disrupted normal—and emergency—distribution of food. In completing this calamitous circle, the military activity halted the flow of fertilizers and pesticides, and prevented locust-control activities. However, recent reports indicate the Ethiopian Government is now aiding the control of locusts in that country. □

Locusts: 'Ticking Time Bomb' on Move

Large Swarms Munch and Molt in Destructive March

The current locust crisis is only the latest chapter in a worldwide and age-long story of destruction. Except for the northern and southern extremities of the earth, it appears that locusts have always been a threat to man's food supply. On every continent they have chewed their way into the recorded history of the region—and the Desert Locust of Africa and Asia has long been considered one of the worst.

The name "grasshopper"—bringing memories of many a farming tragedy on the American plains—is often used for the migratory locust, to prevent confusion with the practically harmless Seventeen - Year Cicada, which is popularly called the Seventeen-Year Locust in the United States.

Actually, the cicada is not a locust or even related to the true locust; it belongs to a completely different order of insects, the true bugs, or hemiptera. Locusts and grasshoppers belong to the order of insects called orthoptera; and, for a more careful distinction, scientists have given the Desert Locust the name *Schistocerca gregaria*, because it has different common names in the many countries it invades.

Dusting for the defense

In recent decades, control measures on an international basis have largely kept concentrations of locust in check. However, when the weather for several years in a row strikes the right seasonal combinations for breeding, the Desert Locust, among all grasshoppers, has the greatest potential to reach devastating plague levels.

Other locusts, such as the Red Locust and the African Migratory Locust, also pose a threat to the agriculture of the same areas as the Desert Locust, but their breeding practices make them easier to control.

Such locusts, for example, have limited "outbreak areas" that can be watched, but the Desert Locust has no such habitual areas. Moreover, it can have years of dormancy when its plague potential can be almost forgotten. Scientists have labeled these as periods of "recession" between "invasions." They have found that invasions have no rhythmical or cyclical periodicity.

In 1921, to explain this complex insect, Sir Boris P. Uvarov advanced the "phase theory," according to which each plague species exists in two phases—solitary and gregarious—connected by transitional forms of the grasshopper. The insect can go on propagating without the transition from the solitary to the gregarious phase, unless weather conditions are ripe for the change.

In the solitary phase, the Desert Locust is chameleon-like, adjusting its color to its surroundings. It is also more sluggish and has a lower metabolic and oxygen-intake rate.

In the gregarious phase, it is a totally different insect. The nymph takes on an orange-yellow or black and yellow coloration and becomes quite active. Changes also occur in its physical structure as it grows, its head and shoulders becoming larger and its wings longer; and there are always more nymphs present than in the solitary phase—from banding together or from a heavier hatch, or both.

The gregarious or swarm stage begins with the migration of the hopper nymphs, marching as they eat and molting as they grow. There are five of these molts, which are called instars, and trained locust experts can identify each. After the fifth instar, the hoppers—still hungry—change into pink immature adults and begin to swarm. It is at this stage that the longest flights are made and the most damage is done by feeding.

What causes the change from phase to phase? Scientists are not completely certain, but they credit a combination of factors.

Heavier rains in normally drier areas permit a larger hatch and provide more food for the hopper nymphs; this produces more adults and more eggs; and if the weather is again favorable, the hatch soon exceeds the food and the overpopulation causes a change in phase.

One of the enemy

A factor controlling the movement of the locusts is temperature. If it is cool, they will remain on the ground for days, as they have done in some Ethiopian highlands. When temperatures rise above 60° F in clear weather or 75° F in cloudy weather, they take off at about 10 miles per hour into the wind. But most winds are stronger than the locusts' flight, and the insects turn and move with the prevailing wind.

In the mornings and evenings when it is cooler, swarms fly closer to the ground and have a flatter formation. During the day the flight spreads out, and this "stratiform" swarm becomes a "cumuliform" mass

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Reprinted, with slight revisions, from Mr. Treakle's article in *Foreign Agriculture*, July 28, 1969—time of the last serious outbreak of the Desert Locust.

Brazil's Agricultural Energy Program Moving Ahead

By Leon G. Mears

Brazil—the world's largest producer of sugarcane—is moving ahead with its efforts to replace a large share of the country's petroleum imports with alcohol produced from sugarcane and other plants. The goal—replace 20 percent of the gasoline projected to be consumed in 1980.

Brazil's National Alcohol Program ("Alcohol is solar energy in liquid form") has evolved into a major Government-industry effort aimed at replacing a large share of the country's petroleum imports with alcohol produced from sugarcane, manioc, and other plants.

This comprehensive program has been given a boost by low world sugar prices that recently resulted in the Brazilian Government's decision to allocate the sugarcane equivalent of 2.1 million metric tons of sugar to the manufacture of alcohol between June 1, 1978, and May 31, 1979.

Brazil is the world's largest producer of sugarcane and the current supply far exceeds the country's current sugar needs for the domestic and export markets.

According to Government estimates, direct conversion of sugarcane to alcohol in the 1978/79 sugar year will be adequate to produce about 2.4 billion liters of alcohol.

This quantity, when combined with alcohol to be produced from residual molasses and manioc, would enable Brazil to pull ahead of schedule in the plan to produce sufficient alcohol to replace 20 percent of the gasoline projected to be consumed in 1980.

Extensive tests in Brazil have shown that with alcohol mixtures up to 20 percent, no major adjustments in car motors would be required. Such a mixture would permit Brazil to reduce its petroleum imports by about 10 percent, thus generating foreign exchange savings in the early 1980's of roughly $450-$500 million or more, depending on the import price of petroleum.

In addition to saving foreign exchange, the alcohol program is expected to provide a variety of other social and economic benefits to the nation. Included are higher employment (particularly in several low income, high unemployment regions); increased demand for selected capital goods such as agricultural machinery, transportation equipment, and distilleries; and greater utilization of the country's vast agricultural resources.

Brazil has long been dependent on imported petroleum as an energy source. In 1977, petroleum imports were valued at $3.8 billion, up $350 million from 1976 and 11 times the level of 5 years ago. In 1970, domestic petroleum production accounted for 35 percent of domestic consumption, but this share has been trending downward, and in 1977 local output accounted for only about 18 percent of domestic usage.

Recognizing the adverse effects growing dependence on imported petroleum would have on the country's ambitious long-range economic development programs, the Brazilian Government launched a comprehensive program aimed at developing an alternative and renewable source of energy. The basic objective of the National Alcohol Program (PROALCOOL) is to indirectly harness solar energy by the utilization of plant materials formed through photosynthesis to produce fuel.

The heart of PROALCOOL is concessional financing of expansion and modernization of current alcohol distilleries, new distilleries and agricultural projects to supply them.

Up to 80 percent (90 percent in north and northeast of Brazil) of the cost of establishing distilleries can be financed at an interest rate of 17 percent (15 percent in the north and northeast) for a maximum period of 12 years with 3 years of grace before repayments begin.

One hundred percent of the cost of financing manioc production projects can be financed at rates as low as 13 percent per year with repayment over 12 years. The current commercial loan interest rates in Brazil range from 45 to 50 percent per year.

According to Government estimates, some $1.6 billion in Government and private funds is expected to be invested in alcohol production between 1976 and 1982.

Brazil has long been a sizable producer and, in recent years, a significant exporter of alcohol. In the past, virtually all alcohol was manufactured from the residual molasses resulting from the sugar refining process.

The residual molasses from the production of 1 bag (60 kg) of crystal sugar is sufficient to produce on the average 7 liters of alcohol (the byproduct of 1 metric ton of sugar is 116.7 liters of alcohol).

Most alcohol distilleries are currently linked to sugarmills, although there are some independent distilleries that purchase molasses from mills. Alcohol production is currently concentrated largely in the center-south area of Brazil, particularly in the State of São Paulo.

Sugarmills in the northeast traditionally have not distilled their residual molasses into alcohol, but have elected to export molasses. However, a number of new projects for building new distilleries in the northeast have been approved and alcohol production is now beginning in some areas.

Alcohol production for the 1978/79 crop year is expected to total about 2.7 billion liters, of which 2.2 billion liters will be used as fuel.

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As of December 1977, selected cities in eight States were utilizing alcohol-gasoline mixtures in ratios varying from 10 to 20 percent alcohol.

Little information regarding alcohol production costs under PROALCOOL is available, as most of the approved projects are just being initiated. Available cost data is primarily for alcohol output by established sugarmills that have been producing alcohol by traditional methods for many years.

According to recent studies, current alcohol production costs about $1.65 per gallon, about double gasoline costs. Proponents of PROALCOOL say alcohol production costs will drop sharply when the modern distilleries now being approved begin operation, and when research and experience leads to more efficient production techniques.

Advocates for PROALCOOL admit current alcohol production costs are above gasoline costs, but say the current high retail gasoline price, $1.60 per gallon, combined with the foreign exchange savings and other far-reaching economic benefits of the program, make use of alcohol as fuel economically feasible for Brazil.

In addition to utilizing residual molasses from the sugar refining process, alcohol can also be manufactured directly from sugarcane. That is, the cane can be used to make only alcohol and no sugar.

Most Alcohol Growth Seen in 3-5 Years

In this case, 67 liters of alcohol can be extracted from 1 ton of sugarcane. Most of the hoped for expansion in alcohol production during the next 3-5 years will likely come from direct conversion of sugarcane to alcohol.

In the past, the manufacture of alcohol served as an escape valve—the direct conversion of sugarcane to alcohol was used only when there was surplus sugarcane production.

For the 1978/79 sugar marketing year, the Government has authorized the sugarcane equivalent of 2.1 million tons of sugar for direct conversion to alcohol.

Manioc Plant Alcohol Most Apt for Brazil

Alcohol also can be extracted from a variety of other plants, such as grains, sweet potatoes, babassu palm, and manioc. Perhaps the most apt for Brazil is manioc. Brazil is already the world's largest producer of this starchy root, with 1977 output estimated at 26.7 million tons.

However, manufacturing alcohol from manioc is more complicated than use of sugarcane, and there is no pool of experienced entrepreneurs in manioc processing as there is for sugarcane.

As a long-term raw material source for alcohol, manioc has a number of advantages over sugarcane, and some disadvantages, as well. This hardy root crop can be grown rather easily on practically all soils in Brazil with little use of fertilizers and other modern production inputs, although fertilizer usage increases yields sharply.

In contrast, sugarcane requires good soil and abundant rainfall and most cane producers apply large quantities of fertilizer.

Manioc can be propagated and harvested throughout the year, whereas sugarcane is a seasonal crop with the harvest period between 150-160 days. Distilleries utilizing manioc could operate year-round, while distilleries based on sugarcane as the raw material source would stand idle more than half the year.

However, a major disadvantage of using manioc as an alcohol raw material is that the residue after crushing is too watery to burn to fuel the distillery. In contrast, the distilleries using sugarcane are largely fired by bagasse—the sugarcane stalk after the juice is removed by rollers.

Proponents of manioc as an alcohol source say the manioc distillery plants can be fueled by the stalks and limbs of the manioc plant supplemented by wood from trees grown at low cost in the same areas as the manioc.

They also say the manioc residue can be sold for swine feed and the protein–rich manioc leaves can be utilized for cattle feed, thereby providing additional income for purchase of fuel for the distilleries. A number of experiments are underway to determine the commercial feasibility of using the manioc residue and leaves for animal feed.

Over the long term, solar energy may prove to be an efficient energy source to fuel the manioc distilleries. The high intensity of sunlight throughout the year in Brazil's tropical northeast is a favorable factor in considering this energy source. The Solar Energy Laboratory at the Federal University of Paraíba currently is conducting a variety of experiments aimed at harnessing solar energy for industrial plants.

The world's first manioc-alcohol plant began commercial operation in January 1978. This plant, located at Curvelo in the State of Minas Gerais, was built by the Government at a cost estimated at $6.5 million. Initial production capacity of this plant is estimated at 60,000 liters of alcohol per day.

Results from this pilot will determine—to a large degree—whether or not alcohol production from manioc will continue to receive heavy Government support. Technicians at the Curvelo plant say that a large share of the high construction cost should be charged to research and development and similar plants in the future will be much less expensive.

Per capita consumption of manioc for food in Brazil has been trending downward for several years, reflecting the migration from rural areas to the cities and changing food preferences and dietary patterns, particularly higher consumption of wheat, rice, and animal products resulting from increased consumer purchasing power.

Less Manioc for Food, More for Alcohol

Manioc production peaked around 1970, with output of about 30 million tons. Between 1970 and 1975, output trended downward, totaling 24.8 million tons in 1976. Favorable weather boosted production in 1977 to 26.7 million tons. Declining demand for manioc for food will tend to make available a larger supply for alcohol production in future years.

Over the long term, other plants may also be raw material sources for PROALCOOL. The babassu palm, which grows wild over vast areas of the Amazon Basin, is considered to be one of the most promising sources.

If Brazil reaches its 1980 goal of 3 billion liters of alcohol for mixture with gasoline, it appears likely that 500 million liters will be distilled from residual molasses from existing production capacity, 2.2 billion liters will be distilled direct-

ly from sugarcane, and 300 million liters will be distilled from manioc.

The agricultural land required to produce raw materials for this alcohol can be calculated as follows: For sugarcane, an alcohol extraction rate of 67 liters per ton would require 32.5 million tons of cane from about 550,000 hectares. And for manioc, an alcohol extraction rate of 180 liters per ton would require 1.67 million tons of manioc from about 85,000 hectares of land.

Current total area in sugarcane is 1.8 million hectares and area in manioc is 2.1 million hectares. Brazil currently has about 47 million hectares of land in crops.

Sufficient raw material to meet the 1980 alcohol goal could be produced on 1.3 percent of the land now in production.

Proponents of PROALCOOL say the impact of the program on production of other crops for domestic consumption and export will be limited since Brazil has abundant agricultural land and manpower.

A number of agricultural experts who have studied the program carefully, however, believe that an immediate sharp expansion of the area in sugarcane would result in some reduction of the area in several other crops, particularly in São Paulo, currently Brazil's leading agricultural State. São Paulo is the most important sugar and alcohol producing State and any short-term expansion is expected to take place there.

At the present time only about 5 percent of Brazil's vast land area is under cultivation, but land in crops is expected to jump sharply in the next decade as a significant part of the savannah area of central Brazil (15 percent of Brazil's total land area) and several frontier areas come under cultivation.

Some Brazilian agricultural experts believe that the domestic and commercial markets abroad for Brazil's leading agricultural crops (coffee, soybeans, cocoa, sugar, and corn) will not be able to absorb readily the large production gains that are anticipated in the next decade.

They believe expansion of the area devoted to sugarcane, manioc, and perhaps other crops for alcohol production will help prevent burdensome agricultural surpluses in addition to meeting the goals of the National Alcohol Program.

It is becoming increasingly clear that the initial PROALCOOL target of 3 billion liters of alcohol mixed with gasoline will be reached, if not in 1980, almost certainly by the early 1980's. Alcohol usage as a motor fuel beyond that level will depend heavily on continued strong Government support of PROALCOOL, demonstrated through financing of additional production projects and purchase of alcohol output at remunerative prices.

Up to this point, the Brazilian Government has been by far the largest supplier of capital and technology for PROALCOOL. In recent months, a number of private firms—domestic and foreign—have demonstrated increased interest in investing in the program, and may become a much more important driving force behind Brazil's effort to harness indirectly solar energy through utilization of plant materials. □

Japan's Soybean Imports Head for Another High

Japan's imports of soybeans appear headed for another record level in calendar 1978, with practically all of these imports again coming from the United States, according to a report from the Office of U.S. Agricultural Attaché in Tokyo.

This year, Japanese soybean imports are forecast to rise sharply to 4.05 million metric tons, of which 3.95 million tons, or 97.5 percent, are expected to be supplied by the United States. If realized, Japan's import volume would be 12 percent above the 3.60 million tons imported in 1977. That year, the rate of increase—compared with 1976's take of 3.55 million tons—was just 1.4 percent.

Along with the increased volume of Japanese soybean imports in these years, the U.S. market share expanded, going from 92 percent in 1976 to 95 percent last year.

On the soybean meal side, Japan's imports in 1978 are forecast at 360,000 tons, up 15 percent from 1977's total of 314,000 tons. The United States is expected to supply 260,000 to 280,000 tons of meal in 1978, compared with U.S. Census-reported shipments of 269,695 tons in 1977.

A projected increase of 4.5 percent in Japan's commercial mixed-feed production should require 20.7 million tons of ingredients, including an estimated 2.32 million tons of soybean meal. In addition, Japan's consumption of fishmeal in mixed feeds is decreasing. Total commercial feed use in 1978 is expected to be only 640,000 tons, more than 100,000 tons less than the level 2 years ago. The sharp dropoff stems largely from international restrictions on Japan's fishing fleets and fewer imports from Peru, which is experiencing a second straight year of reduced fish catches.

Demand for soybean meal for producing soysauce, soy proteins, and feeds mixed on the farm is expected to increase 12 percent to almost 470,000 tons.

Meanwhile, consumption of soybeans in traditional foods is likely to remain at the 820,000-ton level—20 percent of total soybean disappearance.

A look at the edible oil demand situation for 1978 indicates the following:

- A projected increase of 3.4 percent in vegetable oil consumption should generate 1.19 million tons from oil mills, including 579,000 tons of soybean oil;
- Reduced soy oil content in beans from the 1977 U.S. crop requires crushing more beans to meet oil demand;
- Stocks of vegetable oils and oilseeds (oil basis) totaled about 5 weeks' consumption on January 1, 1978, down from 7 weeks' consumption a year earlier;
- Rapeseed oil production is expected to be a record 312,000 tons, up 1.6 percent from that of 1977; and
- Palm oil imports are forecast to rebound to about 155,000 tons, following a decline in 1977. □

Record Soviet Farm Output Fails To Disguise 1977 Disappointments

On the surface, 1977 emerges as a record year for Soviet agriculture. Cotton and rice crops hit new highs. Meat output rebounded and appears headed for record levels in 1978. These successes, however, were blunted by the below-Plan grain harvest that set the stage for resumption of high-level grain imports this year—put at 21 million tons, with 12-14 million tons or more probably originating in the United States.

Last year could be judged a record year for agriculture in the Soviet Union, based on Soviet gross farm output statistics—but, appropriately it is not being hailed as such.

The announced farm production figure of 123.6 billion rubles bettered the previous high of 122 billion in 1973 and the 1971-75 average of 113.7 billion. (One ruble equals about US$1.40 at the official Soviet rate. Traded on West European exchanges, the ruble is discounted considerably.)

However, such generalized measures do not reflect how good diets were in relation to expectations, especially for high-demand items like meats and fresh fruits and vegetables, whose supplies were again inadequate.

Despite the below-Plan grain harvest of 195.5 million metric tons, 1977 agricultural outturns were—by historical standards—generally good, largely as a result of favorable conditions west of the Volga where production of industrial crops and livestock is centered.

As well, the quality of 1977's output probably was better than that of 1976 for all major commodities, except grain and grapes. For example, the Soviet sugarbeet production (93.3 million tons) last year was only 93 percent of the 1976 level, but actual sugar outturn (8.8 million tons) rose about 20 percent. Likewise, the quality of potato and vegetable crops improved, compared with the frost-damaged 1976 outturn.

Top farm successes were near-record production in livestock and products and record crops of cotton and rice, both of which are irrigated and, thus, not as dependent on the marginal climate in the USSR. Again this year, the Soviets should achieve the seed cotton Plan and, in view of the 1980 rice production target of 2.85 million tons, the 1978 rice Plan is likely to be higher than 1977's.

In light of the poor 1976 showing, advances in the livestock sector were particularly welcome as the large 1976 grain crop, largely rebuilt animal inventories, and above-average feed and fodder supplies lifted production over 1976's results in all categories, with the largest gains occurring in pigs and poultry.

On the trade side, the Soviet Union was again one of the leading markets for U.S. farm products, despite a sharp drop in grain imports in the wake of the record 1976 harvest. Exports of U.S. farm products to the USSR reached $1.037 billion in 1977, compared with $1.487 billion in 1976. Major commodity shipments in 1977 were grains, soybeans, fruits, nuts, and cattle hides.

Total Soviet farm imports for 1978 are projected at about $7 billion with 15-20 percent of these coming from the United States. This compares with Soviet agricultural imports of $5.7 billion in 1976 and $9.7 billion in 1975 (the 1977 figure is not yet available).

On a fiscal 1977/78 basis, U.S. farm exports to the USSR are estimated at about $1.8 billion.

Soviet food and farm trade will increase in 1978 with resumption of high-level grain imports following the disappointing 1977 crop. Last year, the Soviets cut grain imports to an estimated 9.7 million tons, but calendar 1978 imports may exceed 21 million tons, of which 12-14 million tons or more will probably originate in the United States.

Soviet imports of meat probably will not be as high as 1977's level of 617,000 tons (product weight). Soviet cotton imports have fallen from a peak of 1.2 million bales (480 lb net) in calendar 1970 to 537,000 bales in 1976 and another drop probably occurred in 1977. Cotton imports are expected to decline again this year. Sugar imports, too, may be some 10-15 percent below the level of last year.

The USSR's short-term hard currency debt to the West is put at roughly $12-$15 billion. Although still in the red, the Soviet hard currency situation improved in 1977 for the second straight year. Compared with the peak annual trade deficit of $6-$7 billion in 1975, the annual deficit by the end of 1977 was believed to be between $3 billion and $4 billion.

Grains. Although the fourth largest on record, the 1977 harvest was a disappointment to the Soviets as grain output (including pulses) fell almost 18 million tons shy of the goal of 213.3 million tons. Usable grain—a key factor affecting Soviet import re-

Based on report from Alan W. Trick, U.S. Agricultural Attaché, Moscow.

quirements—probably did not exceed 170 million tons.

This shortfall was exacerbated by the poor condition of harvested grain resulting from wet late-summer weather in all major producing regions. The leading cause of the production setback was the early and midsummer moisture deficiency in the New Lands in the east and Lower Volga Valley that was only partially offset by record production in the Ukraine, Moldavia, and parts of the Western Russian Federation.

The geographical distribution of 1977's crops resulted in significant gains for winter wheat and corn. For instance, the Ukrainian winter wheat harvest totaled 27.6 million tons, compared with 14.4 million in 1976. Overall, the 1977 wheat crop reached 92 million tons—slightly under 1976's 96.9 million. Winter wheat outturn rose from 44.6 million tons in 1976 to 51.9 million last year as spring wheat fell from 52.3 million tons to 40.1 million.

The biggest loser at this point appears to be spring barley, which tumbled to an estimated 49.7 million tons last year from the record year-earlier harvest of 67.2 million tons. On the other hand, corn output increased to 11.0 million tons last year, compared with 10.1 million in 1976 and the 1971-75 average of 10.2 million tons.

The Soviets' 1978 total grain production goal of 220 million tons appears optimistic and attainable only if growing conditions for the balance of the season are quite favorable.

Feed use and waste are really the only consumption variables since direct human consumption is a rather constant 45 million tons, while seed and industrial uses account for another 30 million. In 1977, the waste component—estimated at 30 million tons—was well above normal, owing to the high-moisture condition. Feed use also climbed to nearly 115 million tons as high-carbohydrate consumers, pigs and poultry, increased sharply in numbers.

With large animal inventories, feed use could rise 5 percent in 1978/79. All other end uses are expected to remain at 1977's levels, except waste, which will be a function of this year's harvesting conditions.

Rice. The major 1977 grain success was rice—in step with the Government's goal of self-sufficiency in this commodity. Rice is totally irrigated in the Soviet Union and last year's output reached the planned level of 2.2 million tons (paddy), a jump of 10-11 percent above that of 1976. An increase of 4 percent in area and 6 percent higher yields accounted for this boost.

Soviet rice imports in 1977 are estimated at 250,000-325,000 tons, the level of the last few years. The U.S. market share probably increased as U.S. exports to the USSR rose from 52,000 tons in 1976 to nearly 80,000 last year.

Livestock and Products. Output of major livestock products rebounded sharply in 1977 and all published goals were surpassed on the strength of higher animal inventories and good feed and fodder availabilities. Overall meat production, however, remained below the peak 1975 level when output was bolstered by distress slaughter.

Last year, meat production rose 1.2 million tons to 14.8 million; milk output jumped 5.1 million tons to 94.8 million; eggs were up 4.8 billion pieces to 61 billion; and wool increased 22,000 tons to 458,000. These gains resulted mainly from the sharp rise in animal herds in the socialized sectors.

The Soviet Union is in a "no lose" position for 1978, with animal numbers up significantly. If feed and fodder supplies are good, meat output will grow at a steady pace; if the feed and fodder situation worsens and distress slaughter ensues, meat production will accelerate—with, of course, undesirable 1979 consequences. The 1978 Plan calls for 15.6 million tons, compared with record production of 15.2 million in 1975.

Cotton. Although the season got off to an unsteady start, a swift recovery made cotton the major Soviet success crop of 1977 as production reached a record 8.76 million tons of seed cotton, 5 percent above target and about a half million larger than that of 1976. This produced the

USDA's Second Forecast: Good Soviet Grain Crop Seen

Conditions for the Soviet Union's total grain crop for 1978 continue to indicate that a relatively good crop outturn is in prospect, according to USDA's forecast based on information available in early July.

At that time, USDA's second forecast this year of the Soviet grain crop put the chances at two out of three that total Soviet grain production would fall within a range of 195-230 million metric tons, including 95-110 million tons of wheat and 90-110 million tons of coarse grains. Barring unusual conditions during the rest of the growing and harvesting season, a total grain outturn of about 215 million tons is indicated, including about 105 million tons of wheat, 100 million tons of coarse grains, and 10 million tons of rice, miscellaneous grains, and pulses on a "bunker weight" basis—not discounted either for excess moisture or for foreign material.

The estimate of the USSR's 1978 total grain area continues at 130 million hectares, approximately the same level as last year's. However, yield per hectare seems likely to average around 10 percent above that of a year ago when total outturn was 195.5 million tons. The expected increase in yields is attributed to significantly better soil moisture conditions and more evenly distributed rainfall so far in the growing season.

Considering both the increased area and the unusually good moisture conditions, total outturn of winter grains probably will approximate the record levels of around 63 million tons harvested in both 1973 and 1977.

For spring grains, moisture conditions are also exceptionally good in most areas, and the stage of development is approximately normal for this time of year. No significant occurrence of hot, dry wind conditions has been noted thus far, and the general pattern of weather conditions experienced to date reflects temperatures somewhat cooler than normal. □

lint equivalent of 12.7 million bales, compared with 12.0 million in 1976 and the previous high of 12.2 million in 1974. Sown area increased slightly by 30,000 hectares to 2.98 million, but most of the production gain was attributed to a recovery in yields.

The Soviet seed cotton Plan this year is set at 8.5 million tons. With another 30,000-40,000 irrigated hectares entering production, this goal could be achieved even if yields are not spectacular, particularly considering that cotton goals are usually exceeded.

However, a recent report indicates heavy rains and hail, chiefly in Uzbekistan and Turkmenistan, necessitated replanting of nearly a million hectares of the 1978 crop. Therefore, a reduction in quantity and quality of this year's crop could result if an early fall frost occurs.

The top trade news last year was the break in the long-standing Egyptian-Soviet cotton link. Although its market share has been diminishing, Egypt was still the dominant supplier of long-staple cotton to the USSR. According to an Egyptian source, Egypt's 1977 exports to the Soviets totaled only 22,000 tons of cotton lint—the lowest since 1955.

The Soviets probably secured the usual 60,000-80,000 tons from other sources, leaving total 1977 cotton imports below the 1976 level of 117,000 tons (lint). Soviet cotton exports last year are estimated at nearly 900,000 tons with Eastern Europe, Japan, and Western Europe (notably France), again the main customers.

For 1978, a reduction in imports is anticipated. Exports may be smaller despite a record 1977 crop, because of gradually rising consumption and reduced imports. In fact, the Soviet Union was very reticent in its offering of cotton for export sale in the first half of 1978.

Oilseeds. Outturn of major oilseed crops rose last year, but still remained far below Plan. The sunflower crop, which accounts for about two-thirds of the USSR's vegetable oil output, stood at 5.87 million tons, 11 percent over 1976's production, but 22 percent off target. The improved outcome stemmed in part from the faster harvesting pace that lessened late-season disease and insect damage.

Moisture content of seeds, however, was undoubtedly much above normal, creating the chance of greater waste and reduced oil quality. Soybean output also climbed last year to 545,000 tons, a 14-percent gain from the 1976 level. Vegetable oil production increased slightly to 2.9 million tons, 4 percent above that of 1976.

Sunflower output this year is again planned at a lofty 7.5 million tons—the most optimistic of all commodity goals. So far, no soybean goals have been announced.

As yet, little is known about Soviet trade in oilseeds and products during 1977. Total soybean imports are estimated at 1.2 million tons, down from 1.8 million in 1976. The U.S. share, however, is set at about 50 percent, compared with 33 percent a year earlier.

As of June 18, the Soviets have booked 829,000 tons of U.S. soybeans for delivery in the 1977/78 season, of which 606,000 tons had already been shipped. Total 1978 imports from the United States could reach 1 million tons. □

Drop in Thai Rice, Corn Crops Shakes Economy

By Dean Richards

An expected drop of nearly 10 percent in Thailand's rice and corn harvest for the 1977/78 crop year (April-March) means bad news for that country's economy since export revenues from these crops generally account for more than 25 percent of the nation's export earnings.

Faced with a sharply rising trade deficit, projected at $1.5 billion, the Government of Prime Minister Kriangsak Chamanand has enacted a number of forceful economic policies to conserve domestic agricultural stocks and to curb Thai expenditures on imports.

In order to honor government-to-government rice contracts, which accounted for more than 60 percent of Thailand's rice exports in calendar 1977, the Government has sharply increased both the rice reserve ratio and the export-price duty assessment. Rice exports are targeted at 1.5 million metric tons this year, 48 percent below last year's record 2.9 million tons. The 1977/78 rice output is estimated at 15 million tons (paddy), down 800,000 tons from that of 1976/77.

Through March 31, 1978, rice exports totaled 577,700 tons, 21 percent under the level during the same period last year. The chief buyers were Indonesia, Malaysia, Singapore, Nigeria, and Saudi Arabia. The Government had announced a rice export target of 300,000 tons for the second quarter, compared with the 500,000-ton goal for the first quarter.

On the brighter side, an upturn in corn exports is foreseen. Even with last season's poor corn harvest of 2.0 million tons, sales in 1978 may rise 14 percent to 1.6 million tons because the 1978/79 corn crop is expected to recover to the levels of previous years. However, exports in 1978 would still be far below the record 1976 volume of 2.4 million tons.

The drought-stricken corn harvest of 1977/78 resulted in corn exports of 1.4 million tons in calendar 1977, down about 40 percent from those of calendar 1976. Low supplies along with strong demand from Thailand's feed industry caused export commitments to Japan and Taiwan—the chief importers of Thai corn—to be sliced in half, to 425,000 tons. Corn exports last year, valued at $190 million, were 32 percent off the 1976 total.

To stem the rapid rise of imports, the new Kriangsak Government has promulgated several measures to reduce imports without jeopardizing the economy's expansion. Some 141 "lux-

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ury" imports have been slapped with stiff tariff increases, while imports of other goods—including fresh apples, pears, and grapes; most nontropical dried fruits; cashew nuts and fruit and vegetable juices—have been banned altogether. U.S. exports of fruits and vegetables and fruit and vegetable juices to Thailand last year totaled nearly $2 million.

Of the fruit and vegetable products affected by the ban, U.S. exports to Thailand totaled $1.3 million in 1976 and $1.0 million in 1975, with fresh apples and concentrated orange juice accounting for nearly 85 percent of these items in both of those years.

Thailand had also announced plans to screen imports of capital equipment for use by the sugar industry, reflecting Government policy to curb further expansion in sugar production.

To ensure more stable export earnings, the Government on March 8, 1978, unpegged the baht from the U.S. dollar, linking it instead to a basket of currencies that included the dollar.

Perhaps most significantly, Thailand has lifted its ban on trade with socialist countries. This move is intended to open up markets in Asian and European centrally planned countries for Thai agricultural and fishery products, as well as for textiles now in surplus. (Prior to the fall of South Vietnam and Cambodia in 1975, 15 percent of Thailand's textile exports were sent to these two countries.) The Kriangsak Government estimates that the new policies could reduce the trade deficit by as much as $400 million.

In 1977, agricultural exports worth $3.1 billion accounted for 92 percent of Thailand's foreign exchange earnings, and with the exception of corn, earnings were up for all major export commodities. Thailand's major trading partners were essentially unchanged from the previous year, except for Nigeria, which replaced Singapore as the second largest importer of Thai rice. Japan remained the principal outlet for corn, sugar and rubber; Indonesia for rice; the Netherlands for cassava products; and United States for canned pineapple.

Last year, Thailand's farm exports to the United States rose 14 percent to $96 million, of which more than half was for rubber. Thai agricultural imports from the United States jumped 18 percent to $113 million. Thailand now buys one-fourth of its farm imports from the United States, with cotton, tobacco, and wheat making up about 85 percent of these imports.

Rice exports of 2.9 million tons earned $630 million in 1977, up 48 percent from 1976's earnings. Again, Indonesia, Nigeria, Singapore, and Malaysia were the principal buyers.

Although 1977's sugar exports rose about 46 percent to 1.6 million tons, value was up only 13 percent to $381 million, as a result of weaker world prices. The People's Republic of China (PRC) and Japan purchased more than 85 percent of Thailand's sugar exports.

Exports of cassava and cassava products were up slightly last year, reaching 3.9 million tons, worth $400 million. European Community (EC) countries—particularly the Netherlands—increased imports, although complaints were registered about excessive waste material.

In 1977, Thailand ranked as the third largest exporter of molasses, behind Brazil and the Philippines. Exports totaled 953,176 tons, valued at $36.7 million—up 50 percent in volume and 32 percent in value from 1976. Japan, South Korea, and the Netherlands were the major customers.

Mung bean exports rose 16 percent last year to 66,186 tons worth $24.6 million with 40 percent of these going to Taiwan.

Kenaf exports of 63,240 tons were worth $18.4 million in 1977, but despite a 28 percent increase in the average kenaf export price, both volume and value were down, 54 and 31 percent, respectively. This situation arose from a combination of reduced quantities available for export and the superior quality and lower prices for Bangladesh supplies.

Sesame exports of 11,603 tons were up 38 percent from the previous year's level as value jumped 31 percent, reaching $5.7 million. Taiwan and Japan were the chief buyers.

Thai soybean exports fared well last year, with volume increasing 36 percent to 11,084 tons and value rising 68 percent to $3.9 million. Hong Kong remained the principal buyer.

Leaf tobacco exports dropped 18 percent to 16,369 tons in 1977 as production slipped 3 percent to 67,000 tons. The EC, Japan, the United States are the major purchasers.

Efforts to increase domestic cigarette production kept exports down and tobacco imports up. For 1977, tobacco leaf imports rose 56 percent to 11,399 tons, with the United States supplying 89 percent. □

U.S. Cheese Imports Edged Up in 1977

U.S. imports of cheese licensed under Section 22 quotas of the Agricultural Adjustment Act increased slightly during 1977, USDA reported recently.

The Department's annual report on imports under quota of cheese and other dairy products showed use of licenses issued against the quotas for cheese amounted to 79 percent of the aggregate quota—compared with 76 percent in 1976.

The purpose of the quotas is to prevent imports from materially interfering with the U.S. dairy support program. Greater quota utilization resulted primarily from an increase in the adjustment of quotas with respect to country of origin. Temporary country-of-origin adjustments in 1977 exceeded those in 1976 in number and magnitude.

The import regulation governing the licensing program requires that such an adjustment be granted during a quota year if it is determined that the originally designated country will be unable to fill its quota. In 1977, the existence of countervailing duty agreements with most European suppliers made it difficult for many of those countries to fill their quotas.

Significant exceptions to the general increase in quota use occurred for Blue mold cheese, Edam and Gouda cheese, and Italian-type cheese in original loaves. Shipments of Blue mold and Edam and Gouda cheese are usually heaviest during the last quarter of each year, in preparation for the holiday season. The east and gulf coast longshoremen's strike from October 1 to December 1 apparently caused considerable delay in clearing shipments through Customs before the year ended. □

Specialists Examine World Food Transport Problems, Trends

Rising world population and consequent higher demand for food and fiber are generating new concern over the adequacy and availability of equipment and facilities to move agricultural products in world trade.

Because of increasing demand for assistance in resolving key handling and shipping issues growing out of an unprecedented rise in the export value and volume of agricultural commodities, USDA's Foreign Agricultural Service in mid-June joined with the Michigan Department of Agriculture and the Mid-America International Agri-Trade

Shipping magnate Clausen

Council (MIATCO) in a 2-day conference at East Lansing, Michigan.

The conference objective: To focus attention on recent transportation developments by explaining in open forums the roles of the specialized elements that make up the transportation industry.

Conference participants heard expert presentations on such specialized subjects as livestock transport, proposed improvements in the St. Lawrence Seaway, marketing agricultural commodities in the Middle East, and advances in packaging and materials-handling technology.

Tom Poerstel, FAS transportation coordinator, summed up the overriding transportation concern facing many U.S. exporters of agricultural products for the 120 participants at the conference:

"U.S. agricultural exports can be greatly affected by costs of transportation and lack of adequate transportation services.

"'With increasing dependence on the United States as a major supplier of key agricultural products, certain complexities in the physical distribution chain have developed that warrant examination and identification so that remedial action can be proposed," he concluded.

In the movement of agricultural commodities to their markets, transportation patterns are shifting to meet changes in demand. For example:

- Exporters of livestock are finding that both sea and air carriers must be utilized to move the expanding numbers of live animals — both breeding animals and slaughter stock — moving in world trade.
- Grain exporting and importing countries are improving their port and terminal storage facilities to accommodate an increasing volume of this trade.
- Shippers of fresh fruits and vegetables are making greater use of refrigerated sea and land transport equipment to expand existing markets and develop new ones.

Advances in transportation technology can generate dual benefits for exporters of agricultural products: Shipping costs can be lowered by the use of more efficient equipment, permitting increased returns to the producer and exporter, and new markets can be developed as a result of improvements in carriers and in port and terminal facilities.

A ship designed to carry new automobiles in export trade, for example, can be modified to accommodate live animals or fresh citrus on return voyages, thus eliminating costly deadheading back to the home port and at the same time supplying needed food products from overseas for consumers at home.

Specialized discussion panels at the Lansing meeting focused on these current transportation developments:

Livestock by sea. During the past several years, U.S. livestock exports have increased substantially. Although a great many animals have been — and are continuing — to move by air, sea transport is receiving renewed attention from exporters because of such considerations as availability, economy, and volume.

Christian Clausen, a Danish ship owner and operator who spoke at the transportation conference, said a growing number of inquiries received in recent months indicate renewed interest in developing regular export programs for slaughter cattle as well as breeding stock. As a result, he expects Clausen ships will again be calling

Egypt's El-Nahal

at U.S. ports in what he called the "not-too-distant future."

"But if you want to establish a good export business, you will have to work at it," he warned. He continued: "Your Foreign Agricultural Service is doing a great job in promoting sales of cattle, as have several of your associations. But somehow, U.S. exporters do not seem to follow through in their efforts to produce regular shipments."

He suggested more traveling by producers and exporters to meet buyers and sellers, and submitting bids on every order in the market.

"If you can fill a large ship," he pointed out, "the unit cost of each animal will be less than if you fill a smaller ship." The Clausen fleet includes 20 ships, with capacities ranging from 250 to 4,000 head of cattle or 2,000 to 44,000 sheep on a single shipment.

Another speaker, Eugene Kline, of Illinois Produce International, stressed the importance of adequate ventilation in air and sea shipments of live animals. "Cat-

By George Baker, *Foreign Agriculture* staff writer.

tle and hogs, if properly housed aboard ship or aircraft, should arrive at their destinations in better condition than when loaded," he said. Poor ventilation can result in costly fatalities, he pointed out.

St. Lawrence Seaway. In 1977, the United States and Canada signed a bilateral agreement on tolls. Because of the relative importance of the Great Lakes and the Seaway to the midwestern U.S. economy, Federal and State Government officials are seeking ways to increase the viability of this inland waterway.

Robert C. Abrahams, of the U.S. Maritime Administration, reported that his agency has been actively soliciting ship owners to operate a subsidized U.S.-flag Great Lakes bulk service on the seaway, with export cargoes of wheat, corn, soybeans, barley, and rye.

U.S.-flag participation in overall Great Lakes bulk trade has averaged only 7 percent over the past 6 years, he said, and in seaway trade, the figure for 1976 was only 5 percent. These low shares are traceable to the Canadian Government's support of its Great Lakes fleet from the opening of the seaway in 1959, while U.S. Government support of the U.S. Great Lakes fleet did not occur until enactment of the Merchant Marine Act of 1970. A U.S. subsidy plan to assist ship operators is now in preparation at the Maritime Administration.

There is a need to develop the seaway's potential, ship operators are agreed, by such means as developing livestock exports and expanding the volume of grain already moving on the seaway.

Packaging and materials-handling equipment. Keys to successful transportation of agricultural products — particularly perishables — are the research and innovations applied in packaging and materials handling to assure a more acceptable outturn of the products exported.

Good packaging, as Dr. Kalman Peleg, of Michigan State University's School of Packaging, pointed out, not only protects the product in transit but also enhances its appeal and sales value.

Engineered fabric liners, for example, can convert shipping containers to accommodate powders, moisture-sensitive products, hides, and similar hard-to-handle commodities. Such liners are available in disposable as well as reusable forms.

Michigan's Governor Milliken

Patented slings can be used to unitize bags, bales, and boxes at the point of origin, eliminating the delays involved in reslinging at shipside and other transfer points. Insulated containers can keep products frozen for as long as 2½ days without the addition of dry ice, thereby lowering the cost of shipping frozen meat, poultry, and other temperature-sensitive products. Jumbo sacks, suitable for foodstuffs, feed, seed, or certain nonfood items, can hold the equivalent of as many as 67 50-lb bags, depending upon density of the commodity. Lifting straps on these bags permit handling by forklifts and other power equipment.

Marketing in the Middle East. With the expanding importance of Middle East markets, the resulting transportation difficulties arising from a variety of problems indicate a need for re-examination.

Shoukry El-Nahal, Egypt's minister for economic affairs in the United States, listed the widening and deepening of the Suez Canal as one of his country's projects to improve transportation. The Suez project, designed to permit canal passage of large cargo ships and tankers, is scheduled for completion by 1982.

The increasing export opportunities that abound in the Middle East were also emphasized by Jafar Omidvar, of the Embassy of Iran; M. Yagil, of the Israel Supply Mission, New York; Rashid Saleem, of the Michigan National Bank, Detroit; and Fuad K. Taima, of the U.S.-Arab Chamber of Commerce.

Edmund L. Nichols, assistant to FAS Administrator Thomas R. Hughes, raised the question of the transportation industry's ability to meet short-term export demand.

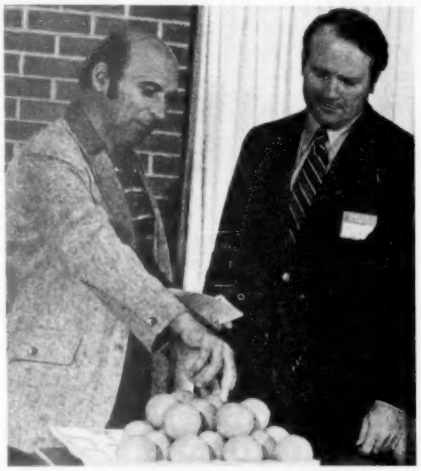
"The preharvest movement is already straining our capacity to handle commodities through our ports and serious problems could develop this year, especially in the Gulf area," he said.

Pointing out that domestic transport is a critical factor in export market development, Mr. Nichols called attention to the need for a detailed study to determine export capability at regional locations for various commodities and products, including alternative shipping point considerations, costs and tradeoffs, and internal linkages and facilities for supplying main U.S. shipping points.

Mr. Nichols urged U.S. business and industry leaders to assign higher priority to export sales.

"Although the Government can encourage industry by providing market information, assistance in market access through financial and tax incentives, and negotiations directed toward reduction of foreign tariffs and nontariff barriers, none of these measures will be effective if prospective exporters are not convinced that their efforts will be matched by Government support," he said.

Exports, he pointed out, are inhibited by such devices as foreign-policy embargoes, extraterritorial application of domestic regulatory actions, strategic trade controls, short-supply controls, antiboycott legislation and regulation,



Kalman Peleg (left) shows Israeli citrus carton to Tom Kelly, Lykes Brothers Steamship Co. executive.

nuclear nonproliferation restrictions, arms-transfer restraints, and human-rights questions.

To remove impediments and stimulate U.S. export growth, President Carter has asked for recommendations and a report from an export policy task force, whose deliberations fell into these categories:

- What is the Government doing to help or hurt exporters?
- What could be done to help more or hurt less?
- What additional costs, if any, can be justified?

"The task force will recommend certain changes, both in regulations and in official attitudes," Mr. Nichols promised.

Michigan's Governor William G. Milliken, in a welcoming address to the conference, pointed out that increasing overseas agricultural markets not only boosts demand — thereby strengthening prices paid producers — but also contributes substantially to the country's balance-of-payments situation. □

Austria Tightens Control On Processed Food Imports

In an apparent move to tighten control of certain imported processed foods, Austria's Federal Ministry of Health and Environmental Protection has issued a new regulation that could hamper sales of U.S. foods in Austria.

The new rule is to be complied with when such shipments arrive in the country. Heretofore, it was up to the so-called Food Police to locate unsatisfactory food products in consumer markets and to withdraw them from the food chain.

The regulation requires importers to provide detailed information about the consignee of each shipment, description of products and quantities involved, applicable tariff numbers, and names of manufacturers. Also to be reported are countries of manufacture, places of storage, final Austrian destinations, and customs clearing points.

The purpose of the ordinance seems to be to enable inspection of imported food shipments while still in one place, before they are divided into smaller lots and moved into regular distribution channels. It also apparently answers complaints that imported foods are not inspected as rigorously for compliance with sanitary regulations as are domestic commodities.

In 1977, the United States supplied Austria with approximately $3.6 million worth of the products that come under the new regulation—mainly canned fruits ($1.8 million), vegetable oils, ($800,000) and canned and preserved vegetables ($700,000).

Other foods that fall under the new restrictions —some of which are imported from the United States in sizable amounts— are smoked meats, sausages and sausage products, canned fish and meat, most vegetable oils, and margarine and other solid fats. Also included are chocolate and cocoa food preparations, certain bakery products, nonalcoholic beverages, and beer. □

India's Tobacco Crop Larger in 1978, Exports Seen Lower

India's tobacco crop is likely to expand this year in response to a gain in planted area, stimulated largely by remunerative prices last year for flue-cured Virginia tobacco. Exports in 1978, however, may dip slightly.

Although the Government of India has not released its official estimate for the 1978 crop, on the basis of available information total tobacco output for 1978 is forecast in the range of 420,000-440,000 metric tons —somewhat above the 1977 outturn.

India's production of all types of tobacco in 1977 was up 18.4 percent over that of 1976 to 414,200 tons. The gain in outturn was the result of a 17.2-percent area increase to 431,600 hectares, primarily in the States of Andhra Pradesh and Gujarat, influenced mainly by attractive tobacco prices.

However, total Indian output of flue-cured Virigina tobacco fell marginally by 2 percent to 91,600 tons. Production of this type of tobacco is expected to rise this year, possibly to 130,-000 tons.

Cigarette production in 1977—at 67.807 billion pieces—was slightly above the previous year's outturn of 67.2 billion. However, the percentage of filter-tipped cigarettes of total cigarette production declined from 33 percent in 1976 to 21 percent in 1977.

Setting a new record, India's export earnings from unmanufactured tobacco totaled $133.8 million in 1977 —up 14 percent from those of 1976. This was achieved despite a 5-percent reduction to 75,440 tons in the quantity of tobacco exported; unmanufactured tobacco exports may also dip in 1978—possibly to 70,000-75,000 tons.

Export earnings in 1977 were boosted by increased Government-administered minimum export prices for 1977. For flue-cured Virginia tobacco, prices were increased 5-6 percent for superior grades, 13-14 percent for medium grades, and 15-21 percent for lower grades.

Two significant developments in India's export trade of unmanufactured tobacco in 1977 were:

- The top two combined markets—the United Kingdom and the USSR—increased their imports from 56 percent to 72 percent of total Indian exports of manufactured tobacco during 1976 and 1977, respectively.
- A drastic 80-percent decline in the purchases of Indian tobacco by Bangladesh and a 65-percent reduction in imports by Somalia contributed significantly to the reduced quantity of 1977 tobacco exports compared with those of 1976.

Based on a report from Ivan E. Johnson, U.S. Agricultural Attaché, New Delhi.

(During the current marketing season, however, U.K. and Soviet purchases have been reduced.)

India's exports of manufactured tobacco in 1977 were down both in tonnage (down 27 percent to 2,849 tons) and value (down 30 percent to around $4.3 million) compared with 1976 data.

The minimum export prices for all types and grades of tobacco for the 1978 crop have been increased as well. For flue-cured Virginia tobacco, prices have been boosted by 5 percent for superior grades, by 10 percent for medium grades, and by 2 percent for lower grades.

For sun-cured Virginia tobacco and sun-cured Natu (country) tobacco, minimum export prices have been increased by 20 percent for the 1978 crop. However, exports from the 1976 and 1977 stocks of all types of tobaccos will be subject to minimum export prices that are 5 percent less than minimum export prices in 1977.

According to a recommendation by the European Community (EC) Commission to its Council, the 1978 Generalized System of Preferences (GSP) tariff quota for unmanufactured tobacco and the preferential tariff rates applicable to imports within the quota are to remain unchanged at the 1977 levels.

The quota would be 60,000 tons of flue-cured Virginia tobacco and 2,500 tons of other unmanufactured tobacco. The preferential rates would be one-half of the full most-favored-nation rates.

If the Commission's proposal is accepted by the EC Council—as is likely—1978 will be the first year since the EC implemented its tobacco GSP that the quota has not been increased.

India is the primary beneficiary under the EC's tobacco GSP because of all eligible supplier countries, India provides the maximum quantity of flue-cured Virginia tobacco to the Community. India would thus be deprived of any advantage that it might have received under an enlarged GSP quota for tobacco imports into the EC in 1978.

The Indian Government's program to expand cultivation of exportable types of flue-cured Virginia tobacco in the light-soil areas of Andhra Pradesh, Karanataka, Tamil Nadu, and Gujarat continues to make steady progress.

Total tobacco area under such soils reportedly increased from 57,000 hectares in 1977 to 78,000 hectares in 1978. Tobacco grown in these areas conforms to the tastes and standards of the export market.

In order to prevent delayed payments by traders and to improve the cash flow positions of growers, the Government has made it mandatory for all registered traders to make payments in accordance with the rules of the Tobacco Leaf Purchase Voucher (TLPV) scheme. Under this scheme—introduced February 9, 1978—traders must pay 50 percent of the value of the purchases by check at the time of purchase and the remainder within 90 days.

Opposition from traders to the scheme initially led to a partial paralysis of tobacco marketing. Subsequently, the Tobacco Board—on February 24, 1978—diluted the rules for the 1978 marketing season by extending the time limit for payment of the second installment to 150 days. □

U.S. Cotton Team Visits PRC

The People's Republic of China (PRC) has great potential for remaining a major market for U.S. cotton if U.S. cotton stays competitive, a seven-man U.S. cotton trade team has reported on its return from a week-long trip to the PRC.

The team told FAS that Chinese textile officials considered the United States a dependable cotton supplier and generally approved of the U.S. cotton delivered thus far in 1978. As of June 4, the PRC had bought around 511,000 bales (480 lb net) of U.S. cotton during the current marketing year and more sales are expected before the season ends July 31. As of May 28, no U.S. cotton had been sold to the PRC for delivery in the 1978/79 season.

The team members—all private citizens and active in the cotton industry—met with officials of the China National Textiles Import and Export Corporation and representatives of several agencies of the Chinese textile industry. They termed the meetings, which ended May 21, as highly constructive, and said the Chinese extended an invitation to other U.S. cotton industry representatives to visit China. In turn, the U.S. team invited Chinese officials to visit the United States to become more familiar with U.S. cotton production and marketing techniques.

The team's China visit was arranged by Cotton Council International, a U.S. cotton industry organization that works closely with FAS in promoting U.S. cotton in foreign markets. □

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Canada, PRC Make Plans To Increase Joint Trade

Continuing efforts to increase trade with the People's Republic of China (PRC), Canada held discussions in Peking March 27-29 under the Canada/China Joint Trade Committee.

During the discussions, the Chinese outlined priority areas under their development plan that ends in 1985. The Chinese also indicated Canadian industries will have an opportunity to participate in areas where they are competitive—petroleum, gas, nonferrous metals, steel mills, hydropower, and railways. In some instances, this participation could include the provision of complete plants.

Missions are expected to be exchanged in 1978 concerning telecommunications, pulp and paper, petroleum production, seeds, and nonferrous metals.

Since Canada and the PRC exchanged diplomatic recognition in 1970, there has been significant growth in bilateral trade, approaching the $500-million mark in 1977. (Canadian exports to the PRC were valued at $369 million; PRC exports to Canada at $82 million.)

The PRC currently is Canada's largest export market for wheat, and shipments of nongrain products have doubled since 1970.

PRC sales to Canada increased fourfold since 1970, although exports declined in 1977.

At the March trade discussions, both Canada and the PRC reaffirmed their intentions to strengthen and diversify trade. While the Chinese delegation expressed desire for a more favorable trade balance, it was indicated that this interest would not impede continued Chinese purchases of Canadian products. The Chinese also plan to broaden their range of exports to Canada.

The next meeting of the Canada/China Joint Trade Committee is set for 1979 in Ottawa. □

Greek Vegetables Get World Bank Aid

The World Bank has approved a $30-million loan to Greece for a vegetable production and marketing project, costing an estimated $84 million.

Some 9,000 farm households (20 percent of whom live below the poverty level) as well as several cooperatives and trucking companies will benefit from the project that supports production and marketing—primarily for export—of about 140,000 metric tons of off-season vegetables, mainly cucumbers, tomatoes, eggplant, and peppers in Crete and the Peloponnesus.

The project includes the construction of greenhouses on 900 hectares and packhouses with cooling facilities. Also to be provided under the project are refrigerated trailers, equipment, and training consultant services to upgrade existing research centers, institutes, and extension services to help promote vegetable marketing companies. The Agricultural Bank of Greece and the Ministry of Agriculture are responsible for execution of the project, which will substantially increase vegetable production and labor productivity in the project area. Estimated net foreign exchange earnings and savings of $300 million will be realized over the project life of 15 years.

Since 1968, World Bank loans to Greece have totaled $435 million. □

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Desert Locust Outbreak Spreading

of great height like a cumulus cloud, with a ball-like rolling movement.

As it moves, some locusts may drop out to feed, but usually few insects are left behind, although storms may kill many. This movement with the wind often results in depositing swarms where winds form a squall line and rain falls to water the vegetation.

Here the horde may reach the mature adult stage, breed, lay several batches of egg cases with 20 to 120 eggs each, and die—leaving the new generations, perhaps to swarm in their turn. Their ability to fly by wing and move with the prevailing winds scatters the breeding or "outbreak" areas over many lands.

Obviously, the best control methods are those that kill the hoppers as they hatch. Therefore, prompt reports of outbreak areas, followed by equally prompt control programs, are the aim of locust control groups. The job is an immense one. □